

IN THE CLAIMS:

The following listing of claims will replace all previous versions or listings of claims in the application.

1-44. (Canceled)

45. (Previously Presented) A method of inducing differentiation of an undifferentiated human embryonic stem (hES) cell into a mesodermal cell, said method comprising:

culturing the hES cell in the presence of an embryonic cell and/or extracellular medium of an embryonic cell under conditions that induce differentiation of the undifferentiated stem cell into the mesoderm cell, wherein said embryonic cell is an endodermal or ectodermal cell, and said mesoderm cell is a cardiomyocyte or vascular endothelial cell.

46. (Previously Presented) A method of obtaining a cell population comprising a sub-population of differentiated cells of a mesodermal lineage wherein the differentiated cells are derived from undifferentiated hES cells in the cell population, said method comprising:

inducing differentiation of the undifferentiated hES cells according to claim 45.

47.-49. (Canceled)

50. (Previously Presented) A method according to claim 45 where the embryonic cell is an endodermal cell.

51. (Previously presented) A method according to claim 45 wherein the embryonic cell is derived from visceral endoderm tissue, or visceral endoderm-like tissue.

52. (Previously Presented) A method according to claim 51 wherein the visceral endoderm or visceral endoderm-like tissue is derived from an early post-gastrulation embryo.

53. (Previously Presented) A method according to claim 51 wherein the visceral endoderm-like tissue is an embryonic cell line.

54. (Previously Presented) A method according to claim 53 wherein the embryonic cell line is an END-2 cell line.

55.-59. (Canceled)

60. (Previously Presented) A method according to claim 45 or 46 further comprising:
preculturing the embryonic cell to a substantially confluent monolayer; and
co-culturing the hES cell in the presence of the embryonic cell monolayer and/or extracellular media of the embryonic cell monolayer.

61. (Previously Presented) A method according to claim 60 wherein the hES cell and embryonic cell monolayer are separated by a filter or a cellular matrix.

62. (Canceled)

63. (Withdrawn) A method according to claim 45 or 46 wherein the hES cell differentiates to a vascular endothelial cell.

64. (Previously Presented) A method according to claim 45 or 46 wherein the hES cell differentiates to a cardiomyocyte.

65. (Previously Presented) A method according to claim 64 wherein the hES cell differentiates to a cardiomyocyte or a cardiomyocyte cell lineage said method comprising:
culturing the hES cell in the presence of an embryonic visceral endoderm cell and/or extracellular medium of an embryonic visceral endoderm cell.

66.-67. (Canceled)

68. (Previously Presented) A method according to claim 45 wherein the embryonic cell is derived from extraembryonic ectoderm and/or endoderm tissue.

69. (Previously Presented) A method according to claim 68 further including culturing the stem cells in the presence of VEGF.

70. (Previously Presented) A method according to claim 45 or 46 wherein the hES cell is genetically modified.

71. (Previously Presented) A method according to claim 46 wherein the sub population consists essentially of cardiomyocytes.

72.-86. (Canceled)

87. (Previously Presented) An isolated cell population prepared by the method according to claim 46.

88. (Previously Presented) A differentiated cell prepared by a method according to claim 45 or 46.

89. (Previously Presented) A cardiomyocyte prepared by the method according to claim 65.

90. (Canceled)

91. (Withdrawn) A vascular endothelial cell prepared by the method according to claim 45.

92.-132. (Canceled)

133. (New) The method of claim 51, wherein said embryonic cell is derived from visceral endoderm-like tissue and expresses alpha-feto protein.